British Columbia's Hunting, Trapping & Wildlife Viewing Sector

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BC STATS

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Hunting, trapping & wildlife viewing in British Columbia

Hunting and wildlife viewing in BC

British Columbia is home to 12 big game species, as well as a variety of small game, upland birds and waterfowl which are hunted by both residents and visitors to the province. Some areas offer access to relatively rare trophy species such as grizzly bear and stone sheep. In addition, moose, deer and other food species are sought by hunters in many parts of the province, as are smaller game and birds.

Note to Readers

Wildlife viewing is an activity that is becoming more and more popular, but at this point no data on the value of this component of the hunting, trapping and wildlife viewing sector is available. It is hoped that the study can be expanded to include wildlife viewing in the future.

Hunting and wildlife viewing activities play an important role in bringing tourists to British Columbia, while providing recreational opportunities for residents of the province who appreciate nature and enjoy the experience of being in the outdoors. For some people, hunting is also an important means of supplementing their food supply. A small number of British Columbians either earn a livelihood, or supplement their income, by hunting and trapping furbearing animals.

Hunter expenditures contribute to local economies

Hunter expenditures on a variety of goods and services contribute to local economies throughout the province. Many businesses in rural communities close to wilderness areas that offer hunting opportunities derive at least some of their income from hunters.

The expenditures associated with hunting can be quite significant. Hunters from BC and other regions must travel to locations (sometimes in remote parts of the province) where the game is likely to be found, so they spend money on fuel, accommodation, food, supplies, and transportation services in order to participate in this activity. They invest substantial sums on equipment, including guns, scopes, ammunition, camping gear and specialized clothing. Some also purchase vehicles, including all-terrain vehicles (ATVs) and snowmobiles that are used for hunting.

Hunters looking to fill their freezers with meat may pay for meat packaging and processing services. Those who wish to keep a trophy of their hunt can spend substantial sums on taxidermy services. Non-residents who wish to hunt in the province must either be accompanied by a family member who lives in BC and has a valid hunting licence, or by guide outfitter who provides a wide range of services, including transportation to and from the hunting territory, accommodation and food services, and the actual guiding service. Guiding fees typically represent a big share of the total cost to non-resident hunters. Finally, non-residents who travel to the province in order to hunt, as well as residents who travel within BC, may combine hunting trips with sightseeing or other tourist-related activities on their way to or from their hunting destination, so businesses with no specific connection to hunting may still benefit from their activities.

However, the value of the combined contribution of resident and non-resident hunters

to the provincial economy has never previously been estimated[1]. This report presents a consistent set of data that can be used to assess the economic impact of hunting and trapping activities in the province, including estimates of gross domestic product (GDP), employment, and revenues resulting from the activities of both resident and non-resident hunters. These are key economic data that can facilitate the development of both public policy and industry practice in response to emerging trends.

Understanding the data

The estimates presented in this report are preliminary and experimental in nature, since they represent a first attempt to measure the size of the hunting, trapping and wildlife viewing sector. It is likely that they will be revised in future as the methodology is refined and more work is done to fill in some of the current gaps in the underlying data. Therefore, the numbers should be viewed as "ballpark" estimates, which indicate the relative size of the hunting, trapping and wildlife sector[2] compared to the rest of the economy, but should not be considered final at this stage.

Readers should note that estimates reported in previous studies of resident and non-resident hunters, as well as the guide outfitting industry are not directly comparable to the data in this report because they are not based on the same definition of the sector. In the case of resident and non-resident hunting expenditures, past studies only looked at direct expenditures on hunting; the information in this report also includes some tourist-related expenditures.

It should be noted that the data for ***non-resident hunters*** *presented in this paper should not be viewed as estimates of the size of the guide-outfitting industry.* Although non-resident hunters who are not accompanied by a family member licenced to hunt in BC must use the services of a guide-outfitter, they also purchase other goods and services while in the province. These can include accommodation and transportation services en route to their rendezvous with the guide-outfitter, as well as other purchases of supplies and equipment. Thus, the non-resident component of the sector includes activities that are paid for directly by the hunter, and not necessarily purchased from the guide outfitter.

Also, in the case of the guide-outfitting industry, the approach taken in this study excludes the activities of guide outfitters that are not directly related to hunting or hunters. The purpose of this study is to articulate the benefits to the BC economy of non-resident and resident hunting, including peripheral activities in which hunters engage, but excluding expenditures that are not made by hunters. Some of the activities in which guide-outfitters may participate (e.g., taking visitors on fishing trips, or commercial hunting and trapping) are already accounted for in other sectors, such as the sport fishing sector.

Previously published studies of the guide-outfitting industry were based on a supply-side approach. Because their goal was to measure the size of the guide-outfitting industry, they included all of the activities of guide-outfitters, not just those that were directly supplied to hunters.

On the ***resident hunter*** *side, only purchases of capital equipment that are specific to hunting were included in the expenditure estimates.* This includes spending on rifles, scopes and

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[1] Previous studies have looked at resident and non-resident hunting, and the guiding industry, separately, but do not provide an overview of the hunting sector that includes both components.

[2] As was previously noted, at this time there is no data on the wildlife viewing component of this sector

similar equipment purchased to participate in this activity, as well estimated spending on specialized vehicles such as ATVs and snowmobiles.

Trucks represent substantial costs for hunters and in many cases, their usefulness for hunting may play an important role in the decision to purchase them. However, it is unlikely that most of the vehicles are used exclusively to hunt. This means that only a portion of the vehicle purchase cost could appropriately be attributed to hunting. Therefore, vehicle purchases were excluded from the estimates of direct hunting-related expenditures.

However, purchases of RVs are included in the tourism estimates (as it is assumed that these vehicles are purchased exclusively for touring), and a portion of those expenditures was attributed to hunters, so some vehicle/camper expenditures are reflected in the data.

Finally, it should be noted that while these estimates include spending on goods and services made by resident and non-resident hunters, *they do not include licence fees*. These are a true cost to hunters, but from the perspective of measuring the value of economic output in industries supplying goods and services to the hunters, it is not appropriate to include these fees, which represent a payment to the government for the use of a scarce resource rather than an actual purchase of a good or service. Industry GDP data are always reported net of indirect taxes such as licence fees.

Key economic data: GDP, revenues and employment

This section provides a brief overview of what these measures mean and how they are calculated.

Industries versus sectors

Industry definitions used by Statistics Canada (the main source of much of the information used to generate the estimates in this report) are based on a standard classification system that groups firms producing similar goods or services together. When some or all of the activities of different industries are grouped together (as is the case for tourism or hunting), the special grouping is usually referred to as a *sector*.

Gross Domestic Product defined

GDP is a measure of the *value added* by an industry or sector to the economy. It is equal to total revenues from the sale of goods or services produced by the industry less the cost of materials, energy and purchased services (e.g., accounting services or legal advice that is not provided in-house) used in production. Indirect taxes (e.g., provincial sales taxes (PST) and the goods and services tax (GST)) levied on products purchased by firms are not included. However, taxes net of subsides on production are included in GDP.

GDP is not the same as an operating surplus or deficit. Some of the items included in GDP (e.g., wages, salaries and benefits) are viewed as costs by businesses. They are included in GDP because they represent the value added by the industry to the raw materials (or other inputs) used in production.

A more complete description of how GDP is measured, and how it should be interpreted, can be found in Appendix 1.

Revenues

Revenue data in this report represent *industry* revenues (from spending by hunters). The data does not include government revenues from sales of licences and permits. These represent a cost to hunters, but do not

directly translate into increased earnings for industries in the province.

Employment

The employment figures in this report are simple counts of the average number of people who work in the sector in a given year. They do not represent full-time equivalents, nor do they distinguish between part-time and full-time workers. They are annual averages based on information from Statistics Canada surveys.

Sources of data

The data used to derive the estimates presented in this report comes from three main sources: Statistics Canada (both published and unpublished information), administrative records of the Ministry of Environment, and surveys of resident and non-resident hunters that were taken in 1981 and 1995. In addition, surveys of the guide outfitting industry (Julie Paul, 1996 and Pacific Analytics, 2004) provided useful information about the structure of the industry and guiding revenues, which was used to help determine non-resident spending.

A share-based approach to measuring the sector's economic footprint

Measuring the contribution made by hunters to the province's economy is not a straightforward task. Hunting is an activity in which individuals are involved; it is not a standard product, or an industry that produces a good or service that can be easily measured and valued. This means that information on the value of hunting is not directly available from data published by Statistics Canada, which focuses on standard industries and industry groups. (On the other hand, commercial hunting and trapping is a standard industry, so information on the value associated with these activities is easier to come by.)

If a hunter purchases camping equipment or ammunition at a sporting goods store, or stays at a motel while he or she is on a hunting trip, the economic value associated with those activities is attributed to the retailing and accommodation industries, not to hunting. This situation is not unique: tourism and related activities such as recreational angling, which straddle numerous different industries, are also not directly measured in the standard data sets.

A share-based approach

Given that information is not directly available, how is the contribution of hunting to the economy assessed? The solution adopted by BC Stats in previous studies (measuring the size of the tourism, high tech, and fisheries & aquaculture sectors) involves apportioning some or all of the total activity in related industries to the sector in question. This can, perhaps, be best illustrated using tourism as an example.

Tourists typically purchase services produced by a number of different industries. They spend money on lodging (accommodation industry), meals (food services industry), travel (transportation industry), attractions (amusement & recreation industry), souvenirs (retailing industry), travel agents (administrative services industry) and so on.

Revenues, employment, GDP and other financial data for these industries are available from Statistics Canada, but the tourist-related component is not separately identified. However, it can be estimated using information such as survey data on the spending patterns of tourists, or passenger and cargo revenues in the transportation industry. For example, the percentage of total airline revenues that comes from transporting passengers is used to determine the tourism component of air transportation.

A tourism share is calculated for each industry that sells directly to tourists, and then used to estimate tourism GDP, employment or revenues in that industry. Summing over all industries gives totals for the tourism sector.

BC Stats has been publishing data for the tourism sector, estimated using this method, for more than a decade[3]. BC Stats' estimates of the value of the fisheries and aquaculture and high tech sectors rely on the same basic approach, as does this study.

Since they are derived by estimating the hunting-related share of industry data published by Statistics Canada, the numbers presented in this report are, by definition, consistent with data for standard industries. This means it is possible to use the information in this report to make inter-industry comparisons. However, it should be noted that the estimates are not direct measures; they are modelled based on all the available information.

A brief overview of the methodology follows, and a more detailed description can be found in Appendix 2

Estimating hunter shares

As was the case in other sector studies, the first step in the process involved determining hunter shares for each industry that sells directly to hunters. The shares used in the calculation were based on the percentage of total consumer spending on various goods and services[4] that was attributable to hunters.

A survey of resident hunters provided information on average expenditures in 1995. Estimates of average spending per resident hunter day were constructed using information from the survey for each of the major species hunted, and for the following expenditure categories:

- Travel & transportation
- Food & lodging
- Guns, ammunition & gear
- Taxidermy & butchering
- Guide fees
- Tips & bonuses
- Other expenditures

There is less information available about non-residents, as the most recent survey of these hunters was undertaken in the 1980s. Therefore, the relationship between resident and non-resident spending by category and species (from the 1981 survey) was used to estimate spending patterns in 1995. For example, it was assumed that if a non-resident bear hunter spent an eighth as much on guns and ammunition in 1981 as a resident bear hunter did, the same relationship would hold in 1995. This assumption was made for all types of non-resident expenditures except guide outfitting, where other data sources were used to estimate average costs per species hunted.[5] A detailed explanation of the methodology used to estimate guiding fees can be found in Appendix 2.

For both resident and non-resident expenditures, appropriate consumer price indexes

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[3] This method was initially developed by BC Stats in the early 1990s. Statistics Canada's *Tourism Satellite Accounts*, which have only recently been expanded to include provincial data, are based upon a similar approach. They rely on tourism shares to allocate commodity or industry totals.

[4] In general, expenditure categories are similar to industry categories. For example, transportation services (a commodity) are usually produced by the transportation industry.

[5] Note that the expenditure data were only used to calculate shares, which were then used to allocate published industry totals.

were used to convert average costs per hunter day in 1995 (by species) into current dollars. For example, 1995 expenditures (per hunter day) on food and lodging were extrapolated into a time series covering the period from 1991 to 2003 using a weighted average of the consumer price indexes for food purchased in stores, restaurant food, alcohol, and accommodation services.

This assumes that the relative *amount* of fuel, food, accommodation, ammunition and so on used by hunters has not changed significantly since 1995, while allowing for the effect of price changes, and changes in hunter activity, over time[6].

The derived time series estimates of expenditures per hunter day for each species were then multiplied by hunter day statistics obtained from the Ministry of Environment to derive an initial estimate of spending by residents. The estimates for each species were summed in order to obtain total spending by hunters for each expenditure category.

In the case of non-resident hunters, it was recognized that guiding fees include payment for a broad range of services, from accommodation to transportation, to the actual guiding activity. Therefore, estimated guiding fees were allocated to these Industries based on information from previous surveys of the guiding industry.

Hunter expenditures were then compared to total consumer spending for each expenditure category in order to calculate a hunter share, which was applied to the appropriate industry totals. The hunting related component of each industry's revenues, employment and GDP was then determined based on these shares.

In addition to the costs identified in the survey, a limited number of tourism-related activities were attributed to hunters. This approach is similar to that used in the estimation of the value of recreational angling, where it was assumed that anglers would also engage in some tourist activities while visiting the province. However, it was assumed that hunters were less likely than anglers to spend time in populated areas where they might engage in other types of tourist activities.

Vehicle purchases and other capital equipment

Although the cost of vehicle operation and fares was included in the expenditure estimates, major capital expenditures such as purchases of motor vehicles were not included. Trucks and similar vehicles represent substantial costs for hunters and in many cases, their usefulness for hunting may play an important role in the decision to purchase them. However, it is unlikely that most of the vehicles are used exclusively for hunting. This means that only a(n unknown) portion of the vehicle purchase cost could appropriately be attributed to hunting. The 1995 survey on which the resident expenditure estimates were based specifically excluded vehicle purchases.

However, it was recognized that some types of vehicles, such as snowmobiles or ATVs, may well be purchased specifically for hunting. Therefore, a percentage of these purchases was allocated to hunting. The same approach was used when developing estimates of the value of recreational angling in the province. Vehicles purchased by anglers were not included in the estimates, although a percentage of consumer

[6] Food expenditures by resident hunters were included in the estimates, although it could be argued that this overstates the economic impact since residents would have to purchase food whether they were hunting or not.

spending on boats was attributed to the recreational angling sector.

Finally, purchases of recreational vehicles (RVs) are included in the tourism estimates (as it is assumed that these vehicles are purchased exclusively for touring), and a portion of these tourism expenditures was attributed to hunters.

The value of hunting in British Columbia

Hunters generated $48 million of the province's GDP in 2003

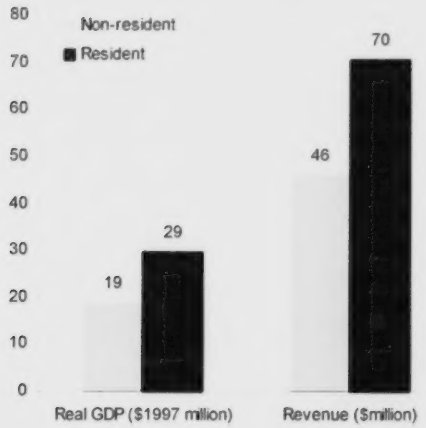

Figure 1
Source: BC Stats

Hunting plays an important role in bringing tourists to the province and provides recreational opportunities for many residents of British Columbia. In 2003, resident and non-resident hunters contributed about $48 million[7] to the province's GDP, just under half as much as the $112 million of GDP resulting from freshwater angling activities. By comparison, the tourism sector[8], which accounts for about four percent of GDP, was valued at $5.1 billion in 2003. British Columbia's total GDP was $121.2 billion, three-quarters of which originated in service industries.

Resident hunters generated the biggest share of GDP, with an estimated $29 million attributable to their activities. GDP resulting from non-resident hunting was substantially lower, at $19 million in 2003.

In terms of industry revenues, hunters in the province spent an estimated $116 million in BC in 2003. Of this total, resident hunter spending was $70 million, with another $46 million of spending by non-residents who traveled to BC to hunt. The market for these activities is, however, rather limited. The Canadian Travel Survey suggests that about 4% of Canadians that visit BC spend at least some time angling, and roughly 1% hunt while they are in the province.[9]

Proportionally fewer BC residents are hunting...

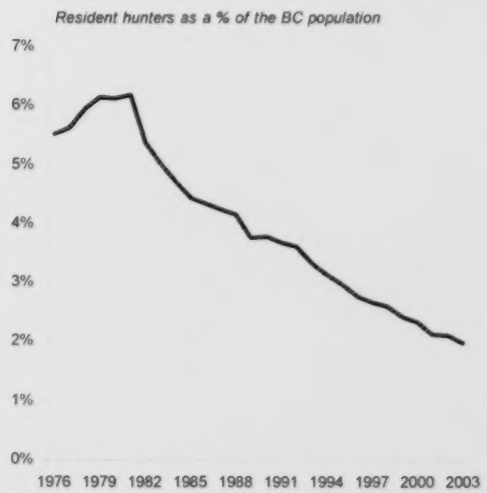

Figure 2
Source: BC Stats

[7] All GDP figures are expressed in constant (1997) dollars. This means that they have been restated to remove the effects of inflation over time. This makes it possible to compare trends over time, since increases or decreases reflect volume, rather than price, changes.

[8] Hunting and angling activities are included in tourism GDP.

[9] These figures are consistent with the data on the size of the hunting and angling industries in the province, as estimated by BC Stats using information from other sources.

...but the value added to the economy by resident hunters remains significant

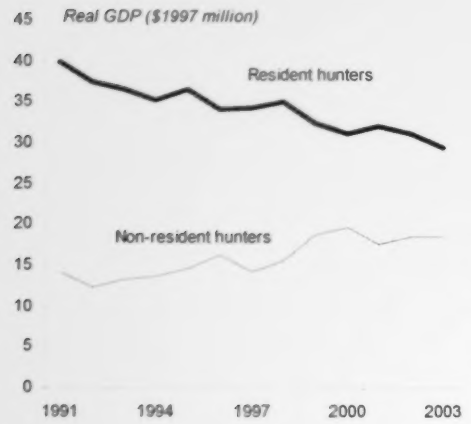

Figure 3
Source: BC Stats

The number of British Columbians who hunt has been declining. Roughly two percent of BC residents were active hunters in 2003, down from six percent in 1981. Between 1991 and 2003, licence[10] sales to BC residents fell from nearly 121,700 to 81,500, suggesting that the number of hunters has declined in both relative and absolute terms. A variety of factors, including shifting consumer preferences, restricted access to the stock of wildlife available to hunters in the province, and fluctuations in the population of some species may explain the long-run decline in hunting participation.

With fewer people hunting, the real value added to the economy by resident hunters has diminished over time. This decline is not limited to hunters, however, Businesses that depend on freshwater and saltwater angling as a source of income have also faced challenges in recent years.

While resident hunters continue to generate the lion's share of total GDP and revenues, non-resident hunters are gaining prominence. There are fewer of them, but they spend more money participating in this sport than do resident hunters. This is largely because, unless they have family members who are hunters and live in BC, non-residents must hire a guide outfitter if they wish to hunt in this province.

Employment

Since non-resident hunters employ guides, the number of jobs directly dependent on non-resident hunting is greater than for resident hunters, who can participate in this activity more independently. Non-resident hunting provided employment[11] for an estimated 960 British Columbians in 2003, while roughly 770 people were employed as a result of resident hunting activities.

More than 1,700 British Columbians owe their jobs to hunting activities

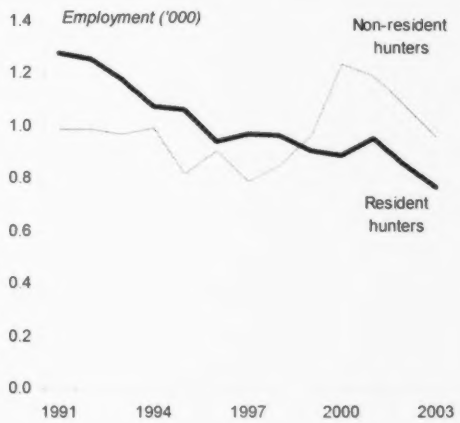

Figure 4
Source: BC Stats

[10] General licences, excluding those for limited entry hunts

[11] Employment data is based on Labour Force Survey data, which can be quite volatile for small industries, so year-to-year fluctuations should be interpreted with caution.

It should be noted that these employment figures are annual averages. During the hunting season, the actual number of people working in the sector may be substantially higher. However, low levels of employment during the off-season will pull the annual averages down. For example, in 2003, there were 239 guide outfitters in the province, with another 1,267 licences issued for assistant guides, a number that exceeds the annual average employment for non-resident hunting in that year.

By comparison, freshwater fishing employed an estimated 3,600 British Columbians in 2003, with another 4,300 jobs dependent on saltwater angling activities. About 140 people worked as commercial hunters and trappers.

The tourism sector as a whole generated about 115,000 jobs[12]. Just over two million British Columbians were employed in 2003. Employment in the tourism sector, and in the economy as a whole, has increased since the early 1990s.

Wages and Salaries

Hunting activities put $30 million into the pockets of BC workers in 2003. Resident hunting accounted for about $19 million of the total, with another $11 million attributed to non-resident hunters. The apparent discrepancy between employment and wages occurs partly because these wage figures do not include the earnings of unincorporated businesses (e.g., independent guide outfitting operations). Only wages paid to employees are included in this data. Additionally, guiding fees dominate spending in the non-resident sector, and average wages are somewhat lower than for employees in some of the service industries supported by resident hunters.

Overall, tourism-related wages were about $3.3 billion, while the total wage bill (excluding benefits) in the province was $65.0 billion in 2003.

Revenues

Industries providing hunting (or tourist-) related goods and services to hunters earned revenues of about $116 million in 2003. Non-resident hunting generated about $46 million, with another $70 million coming from spending by residents.

Resident hunters continue to spend significantly more than non-residents

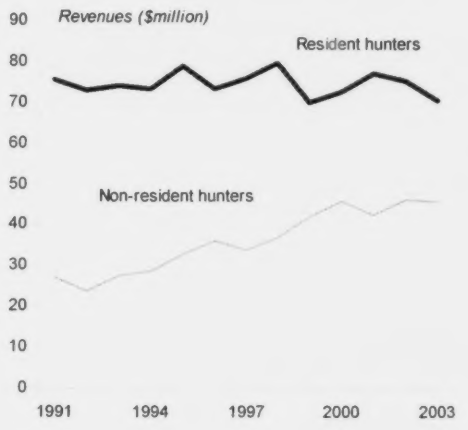

Figure 5
Source: BC Stats

Average resident expenditures vary greatly, depending on the species hunted. This reflects differences in the location of hunting grounds, and the amount of time required to make a kill. Average daily expenditures are highest for grizzly bears, mountain sheep, goats and caribou. Deer hunters typically spend the least, per hunter day,

[12] This figure is based on data from the Survey of Employment, Earnings and Hours, and excludes the self-employed. Adjusting the data to include the self-employed, tourism employment numbers about 143,000.

among the big game hunters. The average daily cost of hunting water fowl, upland birds and small game species is relatively low.

Non-residents spend substantially more money per hunter day than do residents. Since they must usually hire a guide to accompany them, average costs per hunter day can be more than ten times those faced by residents looking for the same type of game.

Hunter Harvests

The characteristics of resident and non-resident hunters are quite different. Resident hunters are somewhat less likely to seek the trophy species than are those who travel to BC specifically to hunt. They are more likely to seek deer, elk and animals that provide meat for consumption. During the open season, residents can hunt as and when the time is available. However, they are limited by the availability of game for harvest.

In contrast, non-resident hunters typically book their hunts well in advance of the season, and generally spend thousands of dollars in order to participate in this activity, on top of the money they spend travelling to BC. Although non-residents hunt all of the major species, they are more likely to be seeking highly prized trophy species rather than game for meat.

With over 23,000 animals harvested in 2002, deer are the most widely hunted game in BC. The second largest harvest is moose (almost 11,000), followed by black bear (nearly 4,000).

Deer are the most widely hunted big game in BC

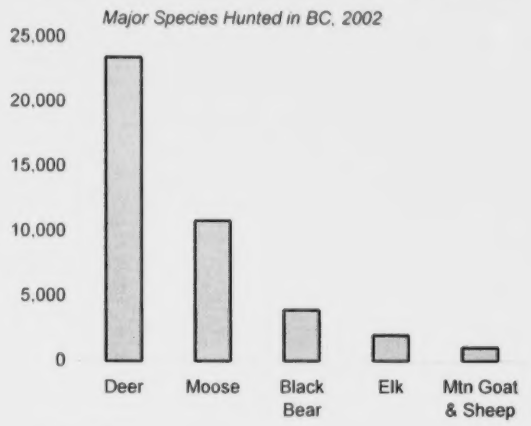

Figure 6
Source: Ministry of Environment data

Trends in Resident Hunting

Over the past two decades, hunting has been on the decline in BC. The decline in the resident harvest is partly due to lower participation, but also reflects wildlife management practices and changes in the population of species hunted.

The large game harvest has fallen 27% since 1981, though most of the downturn occurred in the 1990s. Between 1992 and 2002, the resident harvest of big game species fell 40%. The drop in harvests occurred for all species. The harvest of the major large game species, deer (-47%) and moose (-13%), has fallen significantly since 1992. The grizzly hunt in recent years has been subject to tighter wildlife management restrictions, and kills have fallen 41%, while the mountain sheep and goat harvest is down 34%.

The average number of hunting days per deer (the most widely hunted species) killed increased from 17 days in 1992 to 30 days in 1997. Hunting days per kill remain 39% higher than in 1992. There was a similar trend in elk hunting, and the number of days taken to kill mountain sheep and goat

increased even more. There has not been any consistent trend in the bear hunt (black or grizzly). The sharp decline in the grizzly kill in the last couple of years is related to wildlife management policies. Hunters are spending less time to kill moose and caribou.

Resident large game harvests in decline

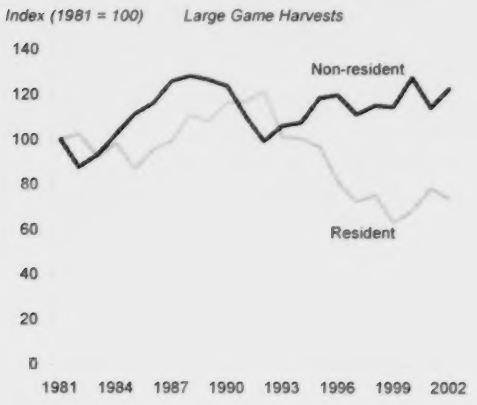

Figure 7
Source: Ministry of Environment data

Non-resident hunters

More than 5,000 non-residents come to BC to hunt each year. They purchase about 7% of basic hunting licences sold in BC, and harvest about 9% of the large game caught in the province. The vast majority of non-resident hunters are from the US (86% in 2002), while virtually none are from other provinces. Germany is also a common source of non-resident hunters.

The trend in non-resident hunting has been considerably different than for BC hunters. The non-resident harvest has increased by more than 20% since 1992.

Non-resident hunters face considerably different costs than do resident hunters: required guide fees, higher prices for hunting licences, and costs related to the kind of animals they hunt. Guide fees represent a substantial expenditure for non-residents. Prices vary depending on the length of the hunt, the species sought, and the individual guide outfitter, but non-residents seeking rare species such as sheep can pay more than $20,000 US for some hunts. Seven-day bear, goat, or moose hunts cost much less, but are still expensive.

However, professional guides also increase the efficiency of a hunt (as measured by the time taken to make a kill). For example, survey data from the 1980s suggest that resident hunters on average spend 35 days in the field for each moose killed. For non-residents, a moose kill only takes 12 days on average (66% less). Further, for both grizzly and mountain sheep hunts, non-residents take almost 50 fewer hunting days to bag their species.

In effect, this means that residents are taking many more trips—and probably several more years—to bag the big game trophies than are non-residents with professional guides. However, since hunting is an activity which hunters can enjoy even if they do not bag their game, time spent per kill is only one way to measure the success of the hunt.

Non-residents spend less time per kill

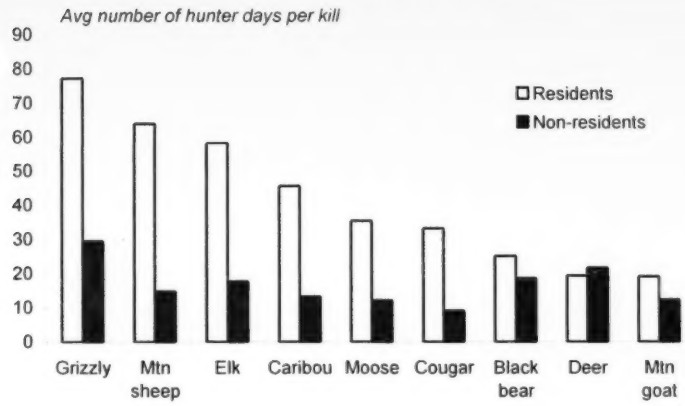

Figure 8
Source: 1981 Survey

Table 1: Price of Licences Much Higher for Non-resident Hunters

	Resident ($)	Non-resident ($)	Non-resident premium
Grizzly Bear	80	1030	1188%
Bison	70	700	900%
Mountain Sheep	60	620	933%
Mountain Goat	40	350	775%
Cougar	30	230	667%
Elk	25	250	900%
Moose	25	250	900%
Black Bear	20	180	800%
Caribou	20	230	1050%
Mule Deer	15	125	733%
White-tailed Deer	15	125	733%
Queen Charlotte Islands Deer	10	25	150%
Bobcat	8	40	400%
Lynx	8	40	400%
Wolverine	8	40	400%

Source: Ministry of Environment fee schedule

Licences are another area of added expense for non-resident hunters. For black bear, the price of the species licence is eight times higher for non-residents, and the licence for moose is nine times higher.

Even with high licence premiums for non-residents, hunters from outside BC appear to be relatively insensitive to the price of licences. Econometric research suggests that licence fees for American hunters could still

be increased sharply with little effect on the number of hunters coming to the province.[13]

Finally, non-resident hunters tend to harvest different animals. For residents, deer is overwhelmingly the most common kill. Deer is also the least expensive large game animal for resident hunters. In contrast, non-residents rarely hunt for deer—a species that is common throughout much of the US. Instead moose and black bear are the most common kills for non-residents. Both of these species are comparatively expensive to hunt.

[13] "Collecting Natural Resource Rents: Setting Wildlife Hunting Fees in British Columbia." Lili Sun, G. Cornelis van Kooten, and Graham M. Voss. April 2003. Department of Economics, University of Victoria. Prepared for the British Columbia Ministry of Water, Land, and Air Protection.

The value of trapping in British Columbia

Hunting and trapping activities generate just under $1 million of the province's GDP

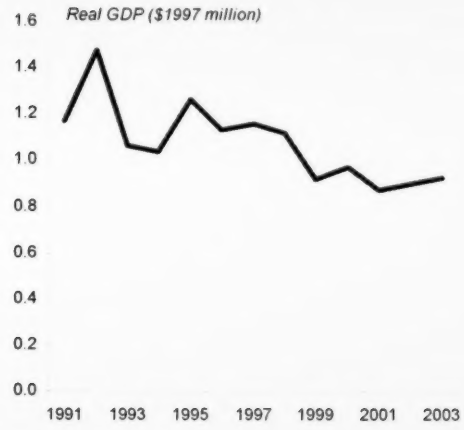

Figure 9
Source: BC Stats

On average, about 1,500 trapping licences are issued in British Columbia each year

Figure 10
Source: Ministry of Environment data

Trapping and commercial hunting is a relatively tiny industry, with just under a million dollars of the province's real GDP originating in this industry in 2003.

Nearly 1,400 trapping licences were issued in BC in 2003. Employment in the Industry was estimated at about 140 in that year, suggesting that trapping and hunting may be a means of supplementing income, rather than the main source of employment for many people who trap or hunt commercially.

The number of people employed in commercial hunting and trapping has increased since 1991, when Census data show employment at 85. There were 110 hunters and trappers in 1996 and 125 people were employed in the industry at the time of the 2001 Census.

A variety of species are sought in the province, but marten is the most important fur-bearing animal, accounting for nearly three-quarters of the total value of wildlife pelts sold in BC (about $1.1 million). Based on value, beaver (8%), otter (4%), wolverine (3%) and lynx (3%) are the next most important fur-bearing species.

Trapping and commercial hunting of fur bearing animals has been in a decline as consumer demand for fur clothing has been decreasing. The value of wildlife pelts produced in BC reached $5.8 million in the mid-1980s, but fell to less than $1 million in the mid-1990s. In recent years, there has been a resurgence in demand for fur products but the value of wildlife pelts sold in BC remains well below previous levels. The industry's contribution to real GDP has been fairly stable in recent years, at just under $1 million.

Appendix 1: GDP: What it is and how it's measured

Economists use gross domestic product, or GDP to measure the contribution made by specific activities, or industries, to the overall economy and to assess trends over time. To those who are more familiar with revenues as a measure of value, the notion of using GDP as a standard yardstick may seem somewhat strange.

The reason GDP is the preferred measure is that it avoids a problem common to revenue-based estimates: double-counting. Comparisons based on revenue (or the value of production) are not always meaningful because of the complex interrelationships that exist among industries. When goods produced by one industry are used as inputs by another one, their value ends up being counted in each industry's revenue every time they change hands.

Consider what happens when a piece of furniture is produced from timber grown in the province. The process starts when trees are felled by a logging company, which then sells the logs to a mill, where they are transformed into lumber. The lumber may then be sold to a wholesaler, from which the furniture maker purchases it, together with other supplies such as nails, varnish, and so on. The furniture maker, through his/her labour, transforms these materials into a table or chair, or some other product, and sells it to a retail outlet for final sale to a consumer.

The retail price includes the cost the retailer paid for the furniture, plus a mark-up to pay for space, heat, wages, retailer profits, and so on.

The furniture maker's price includes the cost of materials used in production, plus a mark-up to reimburse him/her for his time, as well as covering the cost of space, heat, fuel, tools and so on.

The wholesaler's price includes the cost of the lumber purchased from the sawmill, plus a wholesaling markup to pay for expenses, including a return on capital.

The sawmill's price includes the cost of the logs purchased from the logging company, plus its markup.

In this example, the "logs" have changed hands five times, and each time they are sold, the seller includes the cost of the logs plus the cumulative effect of supplier markups in the price of his/her product. Thus, the retailer's revenues are by definition substantially higher than those of the original producer of the raw materials. The likelihood of double counting is, of course, greatest for goods that are highly processed, but is also an important factor in industries such as accommodation and food services.

Revenue figures provide useful information about the total amount of money that changes hands, but they should not be used as a basis for comparing the size of industries. When revenue is the basis for comparison, the industry at the beginning of the supply chain is, by definition, smaller than any of the industries that use its products, even if those industries have added little value to the original product.

GDP eliminates double counting

GDP, on the other hand, counts the value of a good or service used in production only once, and attributes it to the producing industry. By eliminating the double counting of inputs, GDP estimates make it possible to compare, across industries, the contribution to the economy made by various economic activities.

In our example, the value of the logs would be attributed to the original producer, the logging company, but excluded from the GDP of the consuming industries. Similarly, the GDP of the sawmill only includes the value of the work that it did, and so on. This approach gives a better view of the relative contribution made by each industry to the economy.

Appendix 2: Measuring the value of hunting

Measuring hunting expenditures: an overview of the basic methodology

This report presents estimates of the value contributed to the economy by the province's hunting, trapping, and wildlife viewing sector. The estimates were derived using a methodological approach similar to the one that was developed to measure the size of the province's tourism sector in the early 1990s.

The process, which has since been used for a number of special sector studies, is based on a demand-side approach that involves determining appropriate expenditure shares, which can then be used to attribute a proportion (ranging from 0% to 100%, as appropriate) of each industry's activities to the sector being studied. In some cases, the shares are based on information obtained directly from surveys while in other cases, they are calculated from available data on expenditure patterns. For example, for air transportation (an important component of the tourism sector), the passenger travel component of airline revenues is available from reports published by Statistics Canada. This information is then used to calculate a tourism component of the airline industry's revenues.

Once appropriate proportions have been established, they are applied to published estimates of revenues, gross domestic product (GDP) and employment in each industry in order to determine the total value to the economy of the sector being studied. This methodology was the basis of the estimates presented in this report.

Defining hunter expenditures

The first step in the process of developing the estimates presented in this report was deriving expenditure data that could be used to apportion the activities of each industry that provides services to hunters. Hunting expenditures were defined to include all current expenditures, and some capital expenditures made by resident and non-resident hunters in BC. Purchases of goods and services ranging from fuel, accommodation and food to guns, ammunition and ATVs were considered hunting-related expenditures.

It was also recognized that many hunters travel significant distances to hunt, and thus fit the established definition of a tourist (someone who travels at least 60 kilometres away from their usual place of residence). It was thought unlikely that hunters, who must necessarily travel to more remote locations in order to participate in this activity, would engage in some of the typical tourist activities (shopping for knick knacks or visiting museums, for example). However, some types of tourist activities were included in the estimates. This recognizes the fact that hunters may engage in incidental tourist activities en route to or from the hunt. For the incidental tourist activities, information on participation by tourists in hunting was used to allocate already-established tourism data.

Sources of information

Available sources of information on spending by hunters is limited. The Ministry of Environment maintains records of the harvest for species subject to compulsory inspection, and generates annual estimates, by species, of the number of hunters, hunter days, licences issued and the actual kill. Other sources of information used in the study include occasional surveys of resident and non-resident hunters, as well as of the guide-outfitting industry. Additionally, information on price changes over time, and other economic indicators were used as inputs into the calculation.

Over the last few decades, a number of surveys have been taken of both resident and non-resident hunters, but in recent years there has been more of a focus on the resident component. The last comprehensive study of both the resident and non-resident sectors was done in 1981, when the Environment Ministry surveyed resident and non-resident hunters. The 1981 surveys provided detailed information on spending by hunters of each of the following species/species groups:

- Black bear
- Grizzly
- Caribou
- Cougar
- Deer
- Elk
- Moose
- Mountain goat
- Mountain sheep
- Wolf
- Small game
- Waterfowl
- Upland birds

Expenditures were categorized into the following groups:

- licences & tags
- transportation & travel
- food & lodging
- taxidermy & butchering
- guns, ammunition & hunting equipment
- other items

For non-resident hunters, the list also included:

- fees paid to guide outfitters
- tips and bonuses

Survey respondents were specifically instructed to exclude large capital expenditures, such as cabins and trucks. Additionally, the survey reports included information on the number of hunters and hunter days for each species.

Two reports based on the 1981 surveys were published in the mid-1980s. These reports included detailed data on expenditures made by both resident and non-resident hunters on a by-species basis. Data on the number of animals killed, the number of hunters and the number of hunter days was also published in the reports.

In 1995, resident hunters were again surveyed, and the results of that survey were summarized in a report that was issued in 1997. There was no parallel survey of non-resident hunters at that time.

Since the mid-1990s two studies of the Guide-Outfitting Industry have been published. The first, done by Julie Paul and Associates, presented data on revenues and expenditures in the guide-outfitting industry in 1996. A study by Pacific Analytics, published in 2004, provided updated estimates of revenues earned by this industry for the period from 2000 to 2002. The surveys were industry-(i.e., supply-side) rather than client-(i.e., demand-side) based.

Unfortunately, neither report included information on guiding fees by species that could be directly used to estimate non-resident hunter expenditures in a way that was consistent with the data from the Ministry surveys. However, they did provide information on the total value of guiding fees received by operators in the industry, as well as a general outline of the types of expenditures made by guide-outfitters in the process of providing their services. This information was used to help determine appropriate weights for price indexes, as well as providing an indication of the types of activities covered by the fees charged by guide-outfitters.

Data on revenues, employment, wages and GDP in industries that sell directly to hunters were obtained from Statistics Canada, which was also the source of the personal

expenditure data used to determine hunter shares for each industry.

Calculating hunter expenditures

Step 1: Calculate average costs per hunter day in 1995, by species and type of expenditure

For residents, survey data on hunter expenditures was available for two years: 1981 and 1995. For non-residents, the survey data was only available for 1981.

Various measures of hunter effort are available from administrative sources: the number of licences sold, the number of hunters and the number of hunter-days. Theoretically, hunter-days should be the best indicator of effort, since it measures the amount of time actually spent hunting. Even if they do not make a kill, hunters still spend money travelling to their destination, and on guns and other equipment that they use. Also, if the amount of effort required to bag game changes from year to year, this will be reflected in the data on hunter-days. Although estimates based on both licences and the number of kills were produced, the data in this report is based on hunter days.

Average resident and non-resident expenditures per hunter day, by type of expenditure, were calculated for each of the thirteen species/species groups. For example, average expenditures by non-resident hunters who were primarily hunting black bear were calculated from the survey data for each of the eight expenditure categories identified. The same calculation was made for resident hunters. Only those expenditures made in BC were included.

Three sets of data were generated: average spending per hunter day by resident hunters in 1981 and 1995, plus comparable figures for 1981 only for the non-resident component of the sector.

For resident hunters, the information from the 1981 survey, when normalized by the number of hunters and the effect of inflation over time was significantly different from the 1995 survey results. However, while spending *levels* were quite different, the general *pattern* of expenditures (e.g., the percentage of total spending that went to buy guns and ammunition, or accommodation and food services) was relatively stable. This suggests that the type of expenditures made by hunters did not change significantly between 1981 and 1995[14].

For BC residents who hunt, the biggest expenditure item is travel and transportation, accounting for about 40% of total spending (excluding licences). Guns and ammunition account for just under a quarter of their purchases of goods and services, while travel and transportation makes up just over a fifth of their costs. Taxidermy and other costs account for the remainder of their spending.

For non-residents, the available information was more limited since the 1995 report did not include any information on the non-resident sector. Information from the 1981 study suggested that most of the spending by non-residents (about three-quarters) was on guiding fees, with travel & transportation and food & lodging each accounting for about 8% of total spending. In the absence of other information, it was assumed that the relationship between average spending (on a species by species basis) by non-residents and residents did not change substantially between 1981 and 1995. In other words, if the average nonresident bear hunter spent 12% as much on guns and ammunition as a resident bear hunter did in 1981, the same would be true in 1995. This

[14] More recent information on hunting expenditures provided by hunters who kept records of their costs showed similar spending patterns.

assumption was made for all types of non-resident expenditures except guide outfitting fees, which are not a major expenditure item for resident hunters.

Step 2: Estimate average guide outfitting fees per species in 1995

The services provided by individual guide outfitters vary widely. Some offer an all-inclusive package, which covers the purchase of required licences and tags for visiting hunters, payment of taxes such as GST and PST, and airfare for transportation to remote locations. Other guide outfitters charge only for guiding services, and expect clients to make their own arrangements with respect to the required licences and tags, and to pay for other services out-of-pocket. Some rates may include travel from larger centres to a pick-up location; in other cases the customer is expected to make his/her own way to the nearest town, and is then picked up by the guide outfitter.

A recent study of the guide-outfitting industry commissioned by the Guide Outfitters Association of BC, and data published online by the Ministry of Environment suggested that the average cost of guide-outfitting services had increased significantly more than the cost of other goods and services purchased by hunters since the 1980s. Guide outfitting costs, the major expense of non-resident hunters, were therefore estimated using the methodology outlined below.

From past studies of the guide outfitting industry[15], it was determined that wages account for roughly half of the industry's expenditures, while other costs paid by guide outfitters include food, fuel, intercity transportation, accommodation, equipment, and other expenditures. Assuming that guiding fees change in concert with changes in the cost of inputs, it is possible to develop an overall price series for the industry.

For non-wage costs, specific consumer price indices, plus an industry product price index for hunting, camping and fishing equipment were weighted together to make up 50% of the total index. For the wage component (the remaining 50%), the price index was based on an escalator (5% per year), which was equal to the combined average annual change in the overall CPI and the value of the Canadian dollar relative to US funds, since rates are usually set in US funds. The reason this escalator factor was used (instead of a simple CPI/exchange rate combination) was that, although the exchange rate can fluctuate quite substantially, wages usually do not decline.

A sample of published rack rates for operators in the industry was used to help estimate initial daily fee levels for each species. These rates (for hunts in 2004 and 2005) were converted to average costs per hunter day (based on the length of the hunt indicated) for each species. The estimated average costs per hunter day (which, based on the rack rates published, ranged from roughly $500 US for black bear to $1,400 US for sheep) were first converted to Canadian funds, then pushed back to 1995 using the change in the constructed price index.

A discount factor of 20% was applied to the derived estimates for 1995, to correct for variations in prices (the rack rates were for single species hunts only; the per-species cost tends to be lower for multi-species hunts, and not all hunters pay the full rack rate) as well as coverage by different guide outfitters (some rates are all-inclusive, others specifically exclude fly-in costs, or taxes, or licences and tags, which can be quite costly). Using this discount factor, the estimate of total fees paid by non-residents in 1996 was virtually identical to survey information for the guide outfitting industry in that year.

[15] *Julie Paul, 1996 and Pacific Analytics, 2004*

Step 3: Developing time series estimates of hunter expenditures based on survey and administrative information

Survey data provides information at a single point of time, but unless the survey is repeated often, cannot be used to show trends over time. Administrative data from the Ministry of Environment provides time series data on the amount of effort (hunter days) expended on hunting, the number of animals killed, or the number of licences sold. There is no dollar value attached to the first two of these data sets.

In order to derive time series estimates of expenditures by hunters, it was necessary to assume that relative to 1995, changes in expenditures per hunter day were due to price rather than volume effects. In other words, hunters are eating the same amount of food, or consuming the same amount of fuel, per hunter day (and per species) as they did in 1995.

For each broad category, expenditures per hunter day were extended forward to 2003 and back to 1991 using appropriate price indexes. For example, the index for travel and transportation was a weighted average of gas and oil prices, the cost of repairs, the cost of rental vehicles, and intercity (plane) travel. In the case of food and lodging, the index was a weighted average of the consumer price index for food purchased from stores, restaurant food, alcohol and lodging. For guns, ammunition and camping equipment, an industry product price index for hunting, camping and fishing equipment was used. The all-items CPI was used for butchering and taxidermy costs. The index for guiding fees was as described above.

Average expenditures per hunter day for the period from 1990 to 2003 were then multiplied by the number of hunter days (estimates supplied by the Ministry of Environment) to derive expenditure estimates for each species and category. Totals, excluding licences, were calculated for both the resident and non-resident sectors, for each of the major expenditure categories.

Guide-outfitting fees cover a broad range of activities, from accommodation to transportation, to the actual guiding service. In order to reflect this, and because this study is based on a demand-side approach, guiding fees were then split across five categories: fuel and intercity travel (15%), food and lodging (15%), guns and ammunition (10%), other (10%) and guiding services (50%). Thus, the food and accommodation component of the costs charged by guide outfitters was attributed to the accommodation industry, while the cost of purchased transportation services was attributed to transportation. The weights were based on averages from surveys of the guide outfitting industry.

Step 4: Calculating hunting expenditure shares to allocate industry data

The next step was to compare the derived information with expenditure data from the System of National Accounts. Information on spending (in BC and for all species) by resident and non-resident hunters on travel, food and accommodation, and each of the other categories cited earlier was compared to total consumer spending on these items. Relative to the total population, the percentage of people who hunt in BC is quite small, and hunting-related spending on items such as food, accommodation, transportation and equipment accounts for anywhere from of one to three percent of total consumer spending on these goods and services in BC. However, they account for a significant share (about 15%, averaged over the time period studied) of spending on "recreational services"–a category that includes guide services, taxidermy and related activities.

The expenditure shares derived using this method were in line with related information from other sources.

Data from the Canadian travel survey suggest that about 1% of Canadians traveling within the country hunt when they are visiting British Columbia. This percentage has declined over time, from about 3% in the early 1980s. Annual data on participation in hunting was compared to total numbers of visitors to derive a time series of hunters as a percent of tourists, and this percentage was applied to a broad range of tourist activities.

In 2003, there were roughly 81,500 general hunting licences purchased by BC residents. The province has a total population of about 4.2 million. With less than two percent of BC residents involved in this activity, it is not surprising that hunters account for roughly one to three percent of total spending on the goods and services they use when hunting. The 15% average share for recreational services is consistent with the fact that hunters are the main purchasers of some of these services

Step 5: Estimating revenues, GDP and employment for resident and non-resident hunters

The expenditure shares calculated in step 4 were applied to published data (from Statistics Canada) on revenue, GDP and employment for the related industries. For example, the hunter share of expenditures on food and accommodation was applied to total revenues in the accommodation and food services industry. Direct hunter expenditures based on this methodology were derived for each of the expenditure categories noted earlier.

It was also recognized that some hunters are tourists, who may spend part of their time sightseeing or visiting attractions in the province. Therefore, a small percentage (about 1%) of tourist-related activities, including tourist expenditures on taxis, entertainment, and other services was attributed to hunters. Not included, however, were spending on items such as (non-specialized) clothing, jewelry, housewares, books or at art galleries. Additionally, it was assumed that non-residents who used the services of travel agents to book their hunts did so outside the country rather than in BC.

A note on capital expenditures

Following the approach taken in the 1981 and 1995 surveys (which explicitly excluded vehicle purchases), and in other BC Stats studies, some types of expenditures made by hunters were not included in these estimates. Specifically, spending outside the province was excluded since it does not affect BC's economic output. In addition, only some types of major capital expenditures were included in the estimates. A percentage of economic activity related to consumer purchases of snowmobiles, ATVs and recreational vehicles was attributed to hunters. However, purchases of vehicles such as trucks were excluded. Although these vehicles may be used for hunting, they are not necessarily exclusively used for this purpose. This may also be the case for snowmobiles or ATVs, but there is more reason to believe that these vehicles are primarily used for hunting. The same treatment was applied to vehicle purchases in the study of the fisheries and aquaculture sector. Purchases of motor vehicles were not attributed to the sector, but spending on boats was considered to be fishing-related.

Table 1: Real gross domestic product at factor cost

($ 1997 million)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Recreational Angling													
Freshwater	125	119	129	130	130	124	117	118	117	114	115	114	112
Saltwater	163	155	161	155	151	140	136	133	131	124	134	134	135
Recreational Angling Total	***289***	***275***	***291***	***285***	***281***	***263***	***254***	***251***	***248***	***238***	***249***	***248***	***247***
Recreational Hunting													
Non-resident	14	12	13	14	15	16	14	16	19	20	18	19	19
Residents	40	37	37	35	36	34	34	35	32	31	32	31	29
Recreational Hunting Total	***54***	***50***	***50***	***49***	***51***	***50***	***49***	***51***	***51***	***51***	***50***	***50***	***48***
Commercial Hunting & Trapping	***1.2***	***1.5***	***1.1***	***1.0***	***1.3***	***1.1***	***1.2***	***1.1***	***0.9***	***1.0***	***0.9***	***0.9***	***0.9***

(annual % change)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Recreational Angling													
Freshwater	-	-4.6	8.3	0.3	0.1	-4.6	-5.5	0.8	-1.2	-2.5	1.2	-1.0	-1.4
Saltwater	-	-4.9	3.7	-3.8	-2.7	-7.5	-2.3	-2.8	-1.2	-5.0	7.5	0.1	0.5
Recreational Angling Total	-	***-4.8***	***5.7***	***-2.0***	***-1.4***	***-6.2***	***-3.8***	***-1.1***	***-1.2***	***-3.8***	***4.5***	***-0.4***	***-0.4***
Recreational Hunting													
Non-resident	-	-14.1	9.0	2.3	6.8	11.3	-12.1	9.0	19.7	5.6	-10.8	5.8	-0.7
Residents	-	-6.4	-2.4	-3.4	3.5	-6.6	0.6	2.3	-7.7	-4.1	3.4	-2.8	-5.7
Recreational Hunting Total	-	***-8.4***	***0.4***	***-1.9***	***4.4***	***-1.5***	***-3.5***	***4.3***	***0.7***	***-0.5***	***-2.1***	***0.3***	***-3.8***
Commercial Hunting & Trapping	-	***25.1***	***-28.2***	***-2.1***	***21.7***	***-10.8***	***2.7***	***-3.5***	***-17.7***	***5.2***	***-10.0***	***3.1***	***3.1***

Source: BC STATS

Table 2: Gross domestic product at factor cost

($ million)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Recreational Angling													
Freshwater	109	108	121	123	126	125	117	119	121	119	122	122	122
Saltwater	142	140	149	145	145	140	136	134	137	131	143	145	148
Recreational Angling Total	***251***	***248***	***270***	***268***	***271***	***264***	***254***	***254***	***258***	***250***	***265***	***267***	***270***
Recreational Hunting													
Non-resident	12	11	12	13	14	16	14	16	19	21	19	21	21
Residents	35	34	34	33	35	34	34	36	34	33	34	34	32
Recreational Hunting Total	***47***	***45***	***47***	***46***	***49***	***50***	***49***	***51***	***53***	***53***	***53***	***54***	***53***
Commercial Hunting & Trapping	***1.3***	***1.6***	***0.8***	***0.9***	***1.0***	***1.2***	***1.2***	***0.7***	***0.6***	***0.8***	***0.8***	***0.8***	***0.7***

(annual % change)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Recreational Angling													
Freshwater	-	-0.6	11.3	1.6	2.5	-0.7	-6.1	2.0	1.6	-1.9	2.8	0.0	-0.2
Saltwater	-	-1.4	6.4	-2.6	-0.2	-3.6	-2.3	-1.6	1.8	-4.3	9.4	1.2	2.0
Recreational Angling Total	-	***-1.0***	***8.5***	***-0.7***	***1.1***	***-2.2***	***-4.1***	***0.1***	***1.7***	***-3.2***	***6.2***	***0.6***	***1.0***
Recreational Hunting													
Non-resident	-	-10.1	11.7	2.4	9.7	17.0	-12.7	8.5	24.3	6.5	-8.7	9.3	0.5
Residents	-	-2.5	0.5	-2.5	5.3	-3.7	1.6	3.9	-5.3	-3.4	5.0	-1.3	-4.2
Recreational Hunting Total	-	***-4.5***	***3.2***	***-1.2***	***6.5***	***2.2***	***-3.1***	***5.3***	***3.6***	***0.2***	***-0.3***	***2.5***	***-2.4***
Commercial Hunting & Trapping	-	***23.6***	***-48.1***	***4.9***	***15.5***	***14.0***	***-0.9***	***-40.7***	***-15.1***	***44.4***	***-8.8***	***0.9***	***-3.8***

Source: BC STATS

Table 3: Employment*

(thousands)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Recreational Angling													
Freshwater	4.4	4.6	4.6	4.6	4.3	4.2	4.0	3.9	3.8	4.0	4.3	3.9	3.6
Saltwater	5.8	5.9	5.7	5.5	4.9	4.7	4.7	4.4	4.3	4.4	5.0	4.6	4.3
Recreational Angling Total	***10.2***	***10.5***	***10.3***	***10.0***	***9.2***	***8.9***	***8.7***	***8.4***	***8.1***	***8.4***	***9.4***	***8.4***	***7.9***
Recreational Hunting													
Non-resident	1.0	1.0	1.0	1.0	0.8	0.9	0.8	0.8	1.0	1.2	1.2	1.1	1.0
Residents	1.3	1.3	1.2	1.1	1.1	0.9	1.0	1.0	0.9	0.9	1.0	0.9	0.8
Recreational Hunting Total	***2.3***	***2.2***	***2.1***	***2.1***	***1.9***	***1.8***	***1.8***	***1.8***	***1.9***	***2.1***	***2.1***	***1.9***	***1.7***
Commercial Hunting & Trapping	***0.1***	***0.1***	***0.1***	***0.1***	***0.1***	***0.1***	***0.1***	***0.1***	***0.1***	***0.1***	***0.2***	***0.1***	***0.1***

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Recreational Angling													
Freshwater	-	4.4	0.2	-1.1	-5.8	-2.9	-3.1	-2.8	-2.9	4.5	8.4	-10.5	-7.1
Saltwater	-	1.6	-3.4	-4.3	-10.6	-4.4	-0.3	-5.1	-2.6	2.6	13.5	-9.5	-5.6
Recreational Angling Total	-	***2.8***	***-1.8***	***-2.9***	***-8.5***	***-3.7***	***-1.6***	***-4.0***	***-2.7***	***3.5***	***11.1***	***-10.0***	***-6.3***
Recreational Hunting													
Non-resident	-	0.2	-2.0	2.6	-17.4	10.2	-12.3	7.1	13.7	28.1	-3.8	-9.1	-11.4
Residents	-	-1.7	-6.1	-8.6	-1.5	-11.2	3.0	-1.0	-6.0	-1.4	7.1	-10.5	-10.2
Recreational Hunting Total	-	***-0.9***	***-4.3***	***-3.6***	***-9.1***	***-1.9***	***-4.5***	***2.7***	***3.2***	***13.9***	***0.8***	***-9.7***	***-10.8***

** using data from the Labour Force Survey*

Source: BC STATS

Table 4: Wages and salaries

($ million)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Recreational Angling													
Freshwater	66.5	71.2	75.5	72.0	72.6	67.4	65.6	67.2	67.3	67.6	69.7	68.9	67.0
Saltwater	91.4	95.6	96.3	87.7	85.3	77.3	77.9	77.5	77.4	75.7	82.4	82.3	82.0
Recreational Angling Total	***157.9***	***166.8***	***171.8***	***159.8***	***157.8***	***144.7***	***143.6***	***144.7***	***144.7***	***143.3***	***152.1***	***151.3***	***149.0***
Recreational Hunting													
Non-resident	6.0	5.7	6.8	6.7	7.6	8.0	7.7	8.8	10.7	12.3	11.3	12.1	10.9
Residents	23.3	24.3	22.9	20.6	21.6	18.9	19.4	20.4	18.7	19.6	20.4	19.9	19.0
Recreational Hunting Total	***29.3***	***30.0***	***29.7***	***27.3***	***29.3***	***27.0***	***27.1***	***29.2***	***29.5***	***31.9***	***31.6***	***32.0***	***29.9***

(annual % change)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Recreational Angling													
Freshwater	-	7.1	6.1	-4.7	0.8	-7.2	-2.6	2.3	0.1	0.5	3.1	-1.1	-2.7
Saltwater	-	4.6	0.7	-8.8	-2.8	-9.3	0.8	-0.5	-0.1	-2.2	8.8	-0.1	-0.4
Recreational Angling Total	***-***	***5.7***	***3.0***	***-7.0***	***-1.2***	***-8.3***	***-0.8***	***0.8***	***0.0***	***-1.0***	***6.1***	***-0.5***	***-1.5***
Recreational Hunting													
Non-resident	-	-4.3	18.3	-1.6	14.4	5.2	-4.1	14.1	22.1	14.8	-8.6	7.2	-9.4
Residents	-	4.0	-5.6	-9.9	4.9	-12.5	2.3	5.4	-8.2	4.7	3.9	-2.2	-4.7
Recreational Hunting Total	***-***	***2.3***	***-1.0***	***-8.0***	***7.2***	***-7.9***	***0.4***	***7.9***	***0.9***	***8.4***	***-0.9***	***1.2***	***-6.5***

Source: BC STATS

Table 5: Revenue

($ million)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Recreational Angling													
Freshwater	275	276	314	329	336	326	318	327	316	322	331	334	331
Saltwater	359	356	381	377	376	354	361	359	343	335	366	374	379
Recreational Angling Total	***633***	***633***	***695***	***706***	***712***	***679***	***679***	***686***	***659***	***657***	***698***	***708***	***711***
Recreational Hunting													
Non-resident	27	24	28	29	33	36	34	37	42	46	42	46	46
Residents	76	73	74	73	79	73	76	80	70	73	77	75	70
Recreational Hunting Total	***103***	***97***	***102***	***102***	***112***	***109***	***109***	***116***	***112***	***118***	***119***	***121***	***116***
Commercial Hunting & Trapping	***1.9***	***2.3***	***1.2***	***1.3***	***1.5***	***1.7***	***1.7***	***1.0***	***0.8***	***1.2***	***1.1***	***1.1***	***1.1***

(annual % change)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Recreational Angling													
Freshwater	-	0.6	13.6	4.9	2.2	-3.2	-2.4	2.8	-3.4	2.0	2.8	0.8	-0.8
Saltwater	-	-0.6	6.8	-1.1	-0.2	-6.0	2.1	-0.7	-4.5	-2.3	9.4	2.1	1.5
Recreational Angling Total	-	***-0.1***	***9.8***	***1.6***	***0.9***	***-4.6***	***0.0***	***1.0***	***-3.9***	***-0.2***	***6.1***	***1.5***	***0.4***
Recreational Hunting													
Non-resident	-	-12.7	16.3	4.2	13.6	10.1	-6.4	9.4	13.7	9.5	-7.9	9.5	-0.8
Residents	-	-3.6	1.8	-1.1	7.5	-7.1	3.4	5.1	-12.2	3.8	6.4	-2.8	-6.4
Recreational Hunting Total	-	***-6.0***	***5.4***	***0.3***	***9.2***	***-2.1***	***0.2***	***6.4***	***-4.0***	***5.9***	***0.8***	***1.6***	***-4.3***
Commercial Hunting & Trapping	-	***23.6***	***-48.1***	***4.9***	***15.5***	***14.0***	***-0.9***	***-40.7***	***-15.1***	***44.4***	***-8.8***	***0.9***	***-3.8***

Source: BC STATS

Table 6: Hunter days

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Non-resident													
Black bear	9,943	8,088	9,766	9,751	10,825	11,817	10,815	11,114	12,390	14,688	13,688	13,802	13,571
Grizzly bear	3,433	2,807	3,028	2,554	2,803	2,373	1,873	1,901	1,756	2,137	582	1,802	1,624
Caribou	2,526	1,901	2,181	2,377	2,109	2,265	1,974	2,384	2,586	2,674	2,243	2,185	2,277
Cougar	251	320	318	322	376	515	707	715	797	917	825	851	978
Deer	-	-	-	-	-	-	-	-	-	-	-	-	-
Elk	4,236	3,687	4,453	4,482	4,776	4,433	3,796	3,606	4,520	4,439	4,718	5,286	4,667
Moose	10,960	9,820	10,020	10,334	11,023	11,884	11,231	11,027	13,598	13,619	11,794	12,519	12,119
Mountain goat	3,167	2,569	2,873	3,169	3,335	3,593	3,539	3,434	3,688	3,813	3,355	3,159	3,291
Mountain sheep	2,925	2,554	2,450	2,289	2,363	2,549	2,232	2,490	2,587	2,896	2,537	2,794	2,642
Other	4,211	4,050	5,088	5,730	6,736	8,132	7,406	8,944	10,593	12,335	11,271	11,313	11,152
Resident													
Black bear	77,450	79,603	77,200	65,366	73,656	63,476	61,181	68,432	69,446	68,867	74,823	63,499	59,291
Grizzly bear	7,561	8,463	7,124	6,717	8,218	6,110	4,422	4,417	4,054	4,563	1,537	5,062	3,787
Caribou	6,255	6,429	6,662	6,193	7,503	7,399	6,178	7,460	6,692	5,996	6,677	5,561	5,336
Cougar	4,248	4,205	4,970	6,743	10,245	4,772	8,727	9,979	8,826	8,616	9,278	5,966	7,718
Deer	791,782	762,714	786,456	734,855	747,117	629,802	671,725	634,483	559,864	592,156	614,703	561,507	502,439
Elk	137,661	121,500	127,988	117,492	117,418	92,180	97,717	77,940	81,643	80,868	93,943	92,775	84,880
Moose	293,892	304,793	242,627	236,705	237,258	233,738	240,351	265,179	236,689	241,950	260,977	244,456	226,864
Mountain goat	8,166	8,262	9,383	8,585	9,126	7,578	8,120	8,635	6,959	6,616	6,974	5,566	5,302
Mountain sheep	15,492	16,224	15,672	14,497	15,694	13,955	12,699	13,671	13,035	11,465	11,864	10,066	9,134
Wolf	38,859	40,876	33,229	26,215	39,955	27,200	40,444	67,674	24,765	30,612	30,319	27,895	22,342

Source: BC STATS

Table 7: Hunting licences issued

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Non-resident													
Black bear	2,114	1,799	1,994	2,033	2,348	2,591	2,443	2,564	2,841	3,222	3,045	3,033	3,117
Grizzly bear	566	515	483	413	465	411	344	301	285	338	108	274	245
Caribou	423	343	400	402	431	484	460	524	533	548	503	488	472
Cougar	52	82	81	97	114	159	201	211	217	217	211	194	198
Deer	1,510	1,435	1,507	1,409	1,543	1,436	1,195	1,323	1,325	1,513	1,544	1,707	1,671
Elk	844	774	865	861	935	815	753	746	857	828	913	1,043	988
Moose	2,172	2,019	1,986	2,020	2,134	2,123	2,101	2,265	2,472	2,489	2,327	2,489	2,498
Mountain goat	742	650	715	741	753	806	833	826	838	855	788	761	761
Mountain sheep	438	382	377	376	356	374	360	387	383	384	392	399	383
Small game	-	-	-	-	-	-	-	-	-	-	-	-	-
Upland birds	335	365	315	346	357	360	401	462	581	554	402	467	450
Waterfowl	-	-	-	-	-	-	-	-	-	-	-	-	-
Other	1,029	1,083	1,152	1,355	1,482	1,822	1,764	1,967	2,282	2,521	2,405	2,574	2,377
Residents													
Black bear	17,970	18,933	16,781	15,794	14,953	15,026	14,396	15,183	15,363	15,488	14,300	14,671	14,372
Grizzly bear	1,790	1,847	993	1,334	1,367	1,093	657	701	653	792	262	745	607
Caribou	1,749	1,562	2,040	1,570	1,630	1,830	1,661	1,785	1,794	1,529	1,461	1,388	1,227
Cougar	519	675	721	968	818	1,225	1,195	1,401	1,322	1,187	1,185	1,067	980
Deer	136,198	141,343	133,805	128,024	122,988	116,869	110,932	105,621	97,239	98,387	93,218	96,641	93,355
Elk	19,314	16,927	18,156	16,492	16,318	14,014	13,636	10,774	10,637	10,891	11,144	11,958	12,606
Moose	44,304	43,856	36,659	36,014	36,207	35,716	35,086	39,783	34,579	33,998	33,213	35,405	33,875
Mountain goat	2,690	2,734	2,999	2,344	2,591	2,656	2,361	2,565	2,251	2,016	1,896	1,921	1,775
Mountain sheep	2,304	2,992	2,794	2,430	2,562	2,421	2,344	2,355	2,254	1,936	1,890	1,873	1,659
Small game	-	-	-	-	-	-	-	-	-	-	-	-	-
Upland birds	-	-	-	-	-	-	-	-	-	-	-	-	-
Waterfowl	-	-	-	-	-	-	-	-	-	-	-	-	-
Other	-	-	-	-	-	-	-	-	-	-	-	-	-

Source: BC STATS

Table 8: Hunting related permits issued

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Assistant guides	985	1,118	1,162	1,139	1,163	1,247	1,225	1,239	1,246	1,267
Guide outfitters	111	185	190	189	176	192	248	241	239	239
Guide and outfitter licence fee	65	65	64	62	71	49	-	-	-	-
Hunt fur royalty	445	702	638	559	528	416	483	438	335	2,622
Trapping licence	1,432	1,515	1,607	1,547	1,549	1,546	1,525	1,627	1,468	1,396

Source: BC STATS

Table 9: Hunting harvest statistics

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Non-resident												
Black bear	810	720	809	843	1,029	1,240	1,161	1,078	1,367	1,492	1,277	1,241
Grizzly bear	136	129	115	116	120	142	98	81	108	104	28	83
Caribou	202	164	191	192	206	187	165	193	179	190	203	183
Cougar	39	62	61	73	86	118	118	134	126	96	66	71
Deer	299	263	238	201	185	201	161	157	128	300	206	208
Elk	297	308	313	323	309	241	67	88	54	77	92	263
Moose	1,080	993	1,012	1,070	1,191	1,087	1,138	1,275	1,090	1,280	1,249	1,357
Mountain goat	453	355	478	426	451	413	455	479	401	394	368	330
Mountain sheep	272	233	237	237	251	235	240	235	214	193	210	222
Small game	-	-	-	-	-	-	-	-	-	-	-	-
Upland birds	-	-	-	-	-	-	-	-	-	-	-	-
Waterfowl	-	-	-	-	-	-	-	-	-	-	-	-
Other	49	41	30	50	66	87	58	79	102	69	62	72
Resident												
Black bear	3,306	3,480	3,297	2,850	3,063	3,124	3,011	2,829	3,613	2,826	2,814	2,650
Grizzly bear	220	227	122	164	168	221	126	129	156	139	33	133
Caribou	205	183	239	184	191	280	210	195	171	155	192	164
Cougar	149	194	207	278	235	387	299	355	326	216	150	190
Deer	40,870	43,710	35,204	35,989	32,827	26,461	22,148	23,016	20,234	21,884	25,916	23,223
Elk	3,611	3,176	3,133	2,766	2,689	2,116	1,515	1,390	1,077	1,490	1,876	1,688
Moose	11,176	10,865	9,268	8,857	9,849	8,618	9,356	10,168	6,373	7,912	9,041	9,446
Mountain goat	600	610	669	523	578	473	450	506	350	312	341	255
Mountain sheep	348	452	422	367	387	281	259	287	211	142	166	177
Small game	-	-	-	-	-	-	-	-	-	-	-	-
Upland birds	211,066	241,826	155,146	249,682	244,248	142,561	198,414	403,061	150,965	131,006	155,797	196,106
Waterfowl	81,823	99,461	64,382	65,085	68,201	57,206	62,996	64,126	61,263	59,869	58,629	48,200
Other	583	545	306	497	531	566	542	745	513	669	534	545

Source: BC STATS